

Sony Broadcast **BETACAM SP** Catalogue

CAPTURING THE LIVING IMAGE...



Index

Introduction	2
BVW-200P/300P	4
BVW-530P/505P/507P/550P/570P	8
BVP-30AP/30AS	9
BVP-5P/50P	11
BVP-7P/70P	13
BVP-T7	15
BVV-5PS	16
VA-5P	19
VA-500P	19
BVW-35P	20
BVW-22P	23
BVW-60P	25
BVW-65P	25
BVW-70P/70S	25
BVW-75P/75S	26
BK-75A	29
BVX-10P	30
Betacam SP System Options	32
Betacam SP Specifications	33

BETACAM SP

Since its introduction in 1982, Betacam has had a remarkable impact upon the Broadcasting industry, with total sales amounting to over 50,000 units.

Originally designed and developed as a Newsgathering medium, its high quality was such that users expanded its application into other activities, and, with this expansion, came demands for further improvements in picture and sound quality and longer record/play durations. From these demands Betacam SP was conceived, and now it is a major success in its own right, with orders for over 20,000 units worldwide.

What is Betacam SP?

Betacam SP is a format extension of the original Betacam system and obtains maximum benefit from the use of the latest electronic technology, and, perhaps more importantly, from the latest metal particle tape technology.

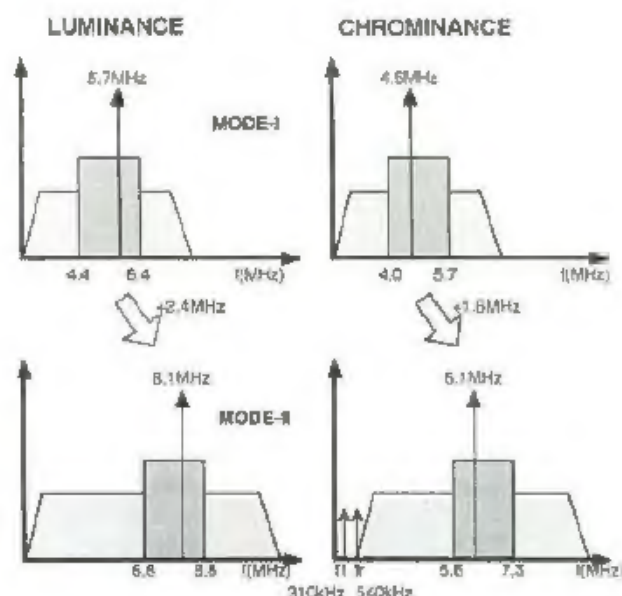


Betacam SP – Video Performance

The key to Betacam SP lies in the utilization of metal particle tape. Its finer particle structure enables the use of higher carrier frequencies, affording greater reproducible bandwidth, while its magnetic properties offer a substantial improvement in signal-to-noise ratio.

Betacam SP – Audio Performance

Betacam SP provides four audio channels. The two longitudinal tracks provide the greatest degree of editing flexibility whilst providing improved performance characteristics. The two additional AFM audio channels are frequency modulated and then recorded simultaneously with the video information by the rotary heads. By their very nature they cannot be edited independently of the video information, but lend themselves ideally to acquisition and transmission, particularly in stereo applications.



Frequency Allocation

Betacam SP – Reliability

The original choice of an 86 μm Y track width for Betacam was a choice born from Sony's years of practical experience in broadcast and professional video cassette systems. It was implemented to ensure high reliability and durability, even in the harsh environment of ENG/EFP. Maintaining the durable 86 μm Y track width, Betacam SP exploits the advantages of metal particle tape to meet the real needs of end users.

Betacam SP – Compatibility

This is an issue of profound importance to the many thousands of Betacam users throughout the world.

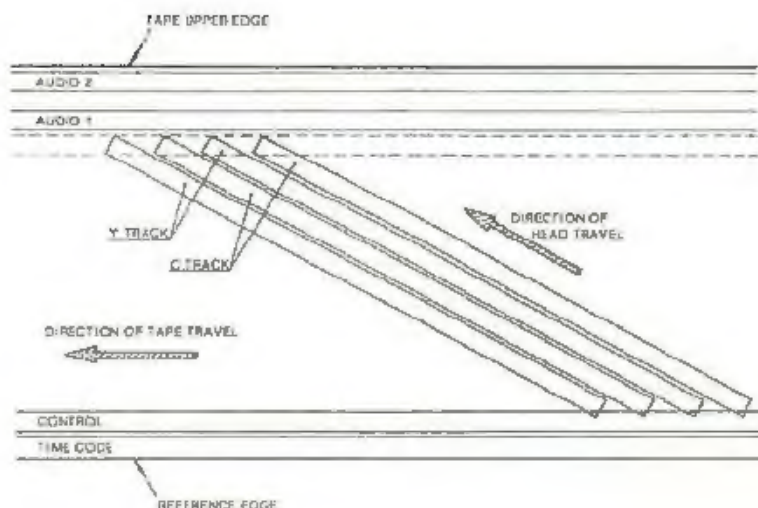
Betacam SP VTRs, whilst designed to provide maximum performance using metal particle tape, are also capable of recording and replay of standard Betacam tapes, providing the same level of performance offered by conventional Betacam. By detecting the type of tape loaded, the system automatically provides the all important 'upward compatibility'.

Cassette Type	Tape	Mode	Betacam		Betacam SP	
			REC	PB	REC	PB
Small Cassette	Oxide		YES	YES	YES	YES
	Metal		NO	YES*	YES	YES
Large Cassette	Oxide/Metal		NO	NO	YES	YES

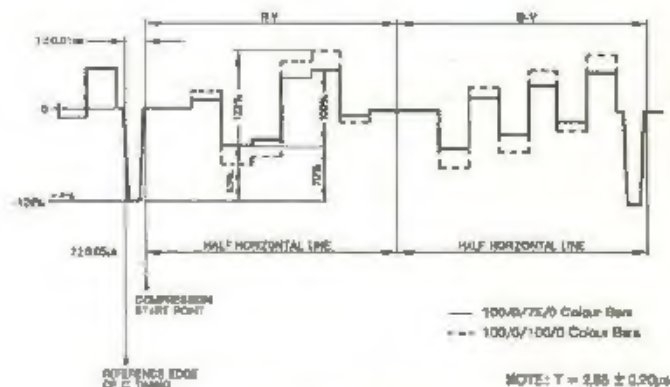
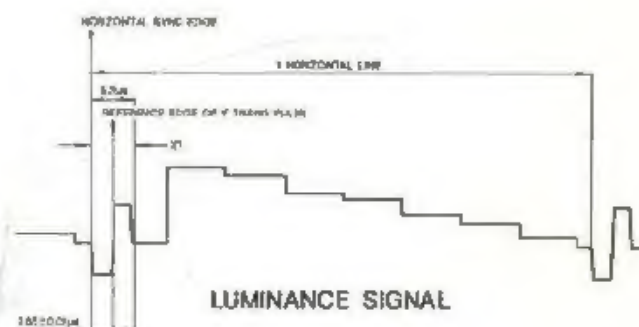
*To replay metal tape cassettes on non-SP Betacam VTRs, some adjustment and modification is necessary.

Betacam SP – Longer Record/Play Time

The studio VTRs accept two cassette sizes. One, the conventional Betacam cassette, offers more than 36 minutes record/play time, the other, a larger cassette, offers a maximum of 110 minutes. These cassettes are available in a choice of standard oxide or new metal particle tape.



RECORD LOCATIONS



COMPRESSED TIME DIVISION
MULTIPLEXED CHROMINANCE SIGNAL

One Piece Camcorders
BVW-200P/300P



A one-piece VTR-in-camera incorporating Sony's latest technology and designed to meet market demands for further enhancements in portability, the new BVW-200P/300P consists of a camera head and VTR built into one body. It is easy to operate, remarkably compact, lightweight and can operate continuously for up to 60 minutes with a single NP-1A battery.

General Features

Compact and Lightweight

Due to the adoption of miniaturised tape transport mechanisms, including the drum assembly, and high density circuit boards using newly developed ICs and hybrid ICs, the BVW-200P weighs only 6.9 kg (15 lb 3 oz), the BVW-300P only 6.95 kg (15 lb 5 oz) including viewfinder, battery, cassette and lens. Furthermore, the main harness connection between the deck and circuitry is eliminated. Power consumption is a mere 20W (21W, BVW-300P) and continuous operation for up to 60 minutes (55 minutes, BVW-300P) is possible with one NP-1A battery.



Easy Operation

Incorporating the camera and VTR in a compact body the BVW-200P/300P is well-balanced and comfortable to operate. The shoulder pad is adjustable to fit the operator's shoulder. Function controls and indications have been simplified to help avoid misoperation. Additionally, equipment specially designed for the BVW-200P/300P, such as the detachable microphone, viewfinder, various optional battery cases and an optional wireless microphone receiver, enhance operation in any shooting environment.

*including lens, battery and cassette.



High Video/Audio Quality

The adoption of a high quality 3-chip CCD camera and Betacam SP recording technology, combine to provide high quality video recording. The BVW-200P CCD camera has a high sensitivity of F5.0 at 2000 lux, 550 TV lines resolution and greatly reduced lag, whilst the BVW-300P provides an even higher level of camera performance.

As part of the Betacam SP family the BVW-200P/300P is compatible with the existing Betacam format and can use either metal particle tape or conventional oxide tape.

Maximum recording time is 36 minutes.

Two longitudinal audio channels equipped with Dolby C Noise Reduction are provided. Two additional AFM audio channels record the same signals as the longitudinal audio channels.

Camera Features

CCD Reliability

Sony's CCDs are resistant to vibration and shock, capable of shooting in strong electric or magnetic fields, and free from registration adjustment. In addition, the problem of image burn-in has been eliminated.

Newly Designed Viewfinder

The innovative viewfinder provides a remarkably high resolution of 550 TV lines employing a magnetic focus type CRT. An adjustable dual edge peaking circuit is included. The viewfinder can operate within 1 second after turning the power on, eliminating the need for a preheat mode. Moreover, the design allows operators to adjust the viewfinder's position laterally and horizontally to allow comfortable shooting in a variety of positions.

Due to the adoption of a large diameter lens, operators can see the full CRT area including corners even when the viewing position is some distance from the viewfinder. Additionally, this viewfinder is compact, lightweight, and consumes less power (1.4W) than previous models.



Automatic Functions

The BVW-200P/300P is furnished with basic automatic operational features to assure ease of operation and simple adjustments.

• Automatic Iris Control

By using a 12-pin lens connector for lens control, the iris can be controlled automatically and speed of response is improved.

• Automatic White/Black Balance

A dual White Balance memory for each filter (four positions) is provided. The colour temperature is memorised during White Balance adjustment and displayed in the viewfinder.

Dynamic Contrast Control (Auto Knee Control)

In a high contrast environment, a clear picture can be obtained by compressing the highlight signal with the Dynamic Contrast Control. The Dynamic Contrast Control, which is ON/OFF selectable, extends the dynamic range by up to 600%.

New Detachable Microphone

A new microphone with anti-vibration circuitry has been specially developed for the BVW-200P/300P. This microphone can be detached easily, and, by using the optional extension cable, can be used as an interview microphone.

Phantom power is provided.



Additional Features of BVW-300P:

High Resolution

The development of a new high pixel density (494, 496 total) $\frac{2}{3}$ -inch imager has resulted in a remarkable horizontal resolution figure of 670 TV lines.

Reduced Vertical Smear

The new "HAD" (Hole Accumulated Diode) Sensor technology adopted in the CCD sensors significantly reduces vertical smear effect when compared to other interline transfer imagers.

Excellent Sensitivity and Noise Performance

The BVW-300P sets new standards for sensitivity and noise performance. Sensitivity is F5.6 at 2000 lux (90% reflectance). The excellent dark noise characteristic of the CCD structure ensures a Signal-to-Noise Ratio of 59dB.

Improved Colorimetry

Improvements to CCD spectral response have produced colorimetry characteristics which closely approximates to Plumbicon-type cameras.

Electronic Shutter

The BVP-50P camera proved the tremendous value of electronic exposure control ("shutter"), enabling clear "snap shot" image acquisition of fast moving action. This facility is now available on the BVW-300P. Six speeds are provided; 1/60, 1/125, 1/250, 1/500, 1/1000 and 1/2000 sec.

VTR Features

Viewfinder Playback

The viewfinder plays back a monochrome picture. Besides luminance signal playback, chrominance (CTDM) signal playback can also be selected. Simultaneous audio playback is also available through the built-in loudspeaker or an earphone.

Recording Review Function

When the return video switch on the lens is pressed in the Rec Pause mode, the tape rewinds about 2 seconds and the BVW-200P/300P automatically plays back the last scene and stops precisely at the position where Rec Pause was selected, ready to record the next sequence. If the return video switch is pressed for a longer period, the tape rewind time can be extended up to a maximum of approximately 10 seconds.

Full Function Control

The Eject, Play, Rewind, Fast Forward and Stop function buttons, located on the top of the VTR, have a safety lid which can be used to avoid misoperation. All the keys are automatically inhibited during recording. Record mode can be activated by the trigger button on the camera front or zoom lens.

Colour Playback

Adaptor option (VA-500P)

A single 20-pin interface connects the BVW-200P/300P to the VA-500P. This provides both Composite Video and UHF outputs for replay on a monitor or conventional TV set.

Interface to an external TBC is also provided.



Built-in Time Code Generator/Reader

EBU Time Code is automatically recorded on a dedicated time code track. Time Code, User Bits and the new real time clock can all be reset. VITC insertion is also possible and the inserting lines can be selected. A built-in LTC reader is also included in the BVW-200P/300P.

LCD Multiple Display

An 8-digit LCD display provides Tape Time, Time Code and User Bit indications. Two channel audio level and battery status are displayed in a Bargraph meter next to the warning indications.

Real Time Clock

This allows time of day illumination to be recorded as the User Bit information of either the longitudinal or vertical interval time code.



Lens is optional.

Audio System

The BVW-200P/300P accepts two channels of audio inputs and features the well proven Type C Dolby NR (Noise Reduction) system. Additionally, two AFM audio channels are available for simultaneously recording the same signals as those recorded by the longitudinal audio channels.

Phantom Power Supply

The audio CH-1 and CH-2 XLR connectors can provide 48V power output to external microphones. When the audio input select switch is set to Line, phantom power is automatically switched off.



Built-in Loudspeaker

The audio loudspeaker built into the BVW-200P/300P further enhances its cableless operation. During recording, mixed channel, individual channel, or alarm tone signals can be monitored. A monitor level control and an alarm tone level control are provided separately.

Diagnostic System

The BVW-200P/300P is provided with a sophisticated diagnostic system. The various modes can be selected and executed via the Time Code setting Advance/Shift key. The status can be displayed on the LCD character display area or the viewfinder.

Other Features

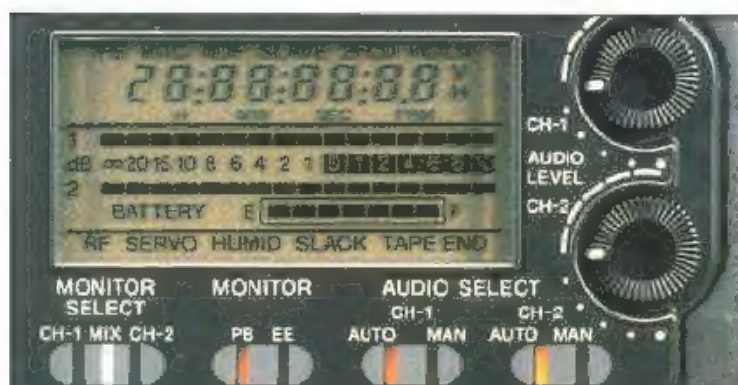
Time Code Slave Lock Function

In addition to the built-in Time Code Generator, the BVW-200P/300P is provided with external Time Code input/outputs. Therefore, the BVW-200P/300P is capable of being locked to an external Time Code Generator, or can provide time code for other machines.

Warning and Status Indication

• VTR

Indications of RF, SERVO, HUMID, SLACK, TAPE END and BATTERY are displayed on the LCD to give details on the warning status.



• Viewfinder

The above warning indications are also displayed on the viewfinder. Furthermore, in order to ensure flawless operation, the BVW-200P/300P viewfinder provides indications such as Rec status, Battery warning, 5-segment AUDIO LEVEL indication, VIDEO LEVEL (zebra pattern), White/Black Balance confirmation, Tape Remaining time, Filter (1 to 4), and GAIN setting.



Selectable Battery Cases

In addition to the supplied battery case for one NP-1A, the BVW-200P/300P can accept optional battery cases to extend operation time. The DC-500, which houses one BP-90/90A, can be easily attached onto the back of the BVW-200P/300P when the NP-1A battery case has been detached. The DC-520, when attached onto the supplied battery case, allows the BVW-200P/300P to house two NP-1A batteries.

Optional WRR-28 Wireless Receiver

Optional WRR-28 UHF Wireless Receiver can be fitted to the rear of the BVW-200P/300P.

The WRR-28, with its newly developed compander system, compact and lightweight construction, noise reduction system and wide service area makes the BVW-200P/300P combo even more useful in the field. The WRR-28 can operate using DC power supplied from BVW-200P/300P.



Optional RM-P3 Remote Control Unit

Basic remote control of the BVW-200P/300P camera functions can be performed from the RM-P3 Remote Controller. It is connected directly to the BVW-200P/300P via a 6-pin connector.



Supplied Accessories

Tripod Adaptor VCT-14 (1)
Extender Board (1)
Rain Cover (1)
Shoulder Strap (1)
Carrying Case (LC-201) (1)
Operation and Maintenance Manual (1)

BVW-530P/505P/507P/550P/570P



BVW-530P 3-tube Plumbicon Camera/Betacam SP Recorder Combination

BVW-505P CCD Camera/Betacam SP Recorder Combination

BVW-507P High Resolution CCD Camera/Betacam SP Recorder Combination

BVW-550P FIT CCD Camera/Betacam SP Recorder Combination

BVW-570P High Resolution FIT CCD Camera/Betacam SP Recorder Combination

These Camera/Recorder Combinations take full advantage of the improvements provided by Betacam SP technology in programme acquisition.

In each case, a different camera configuration is employed and the only common component is the BVV-5PS Recorder Unit.

To avoid repetition, the BVV-5PS is described as an independent unit capable of being attached to the individual camera sections, viz BVP-30AP, BVP-5P, BVP-7P, BVP-50P and BVP-70P. When combined, they become the BVW-530P, BVW-505P, BVW-507P, BVW-550P and BVW-570P respectively.

Specifications for the individual units are given at the end of the Catalogue.

BVP-30AP/30AS



The Betacam 3-tube camera BVP-30A is ideally suited for ENG/EFP applications. Outstanding performance in resolution, sensitivity, S/N ratio, lag and colour fidelity is achieved by optimising the performance of the 3-tube system employing Diode Gun Plumbicon™ MF (magnetic focus electrostatic deflection) tubes. Additional useful features are its compact size, light weight, rugged construction and low power consumption. A full range of automatic setup and operational facilities are provided. Designed as an integral element in the Betacam recording system, the BVP-30A can also be operated as an independent portable camera using the CA-3A/CA-30 Camera Adaptors for both component/composite signal outputs to portable VTRs.

Features of the BVP-30A Series

New Technology of Electrostatic Deflection System

The Betacam 3-tube Camera has adopted a 3-tube 2/3-inch Diode Gun Plumbicon™ for the BVP-30A, employing Electrostatic Deflection Systems.

High Resolution

A centre resolution of 650 TV lines can be achieved, exceptionally high for a portable camera, due to the MF PbO tubes used. Corner resolution is also improved since a constant beam focus can be maintained over the active area of the tube face.

High Signal-To-Noise Ratio

An S/N ratio of 57dB (PAL, SECAM) is possible due to the low output capacitance of the target electrode and a low noise FET with high sensitivity. Excellent circuit performance and an exclusive method of isolating the target electrode from deflection cross-talk make further contributions to improving the S/N ratio.

High Sensitivity

The PbO photoconductive layer used in the BVP-30A pick-up tubes achieves a sensitivity of 2000 lux at F4.5.

Less Registration Error

Improved deflection accuracy provides remarkably reduced registration error. This also contributes to improved luminance corner resolution.

Compact, Lightweight and Rugged Construction

New camera tube technology has enabled Sony to realise an exceptionally compact and lightweight 3 tube colour camera weighing only 4.3 kg (9.5 lb) without lens. The magnesium diecast alloy frame assured rugged construction.



Automatic Functions

The BVP-30A is furnished with a host of automatic operational features assuring the greatest ease of operation and simple adjustment.

- Automatic Centring
- Automatic White/Black Balance
- Automatic Beam Optimiser
- Automatic Tube Protection Shutter



Viewfinder Indications

To assist the operator the following viewfinder indications are available –

- REC status indicator (red)
- FILTER indicators 1, 2, 3 and 4
- AUDIO LEVEL indication (CH-1 only)
- VIDEO LEVEL indication (Zebra pattern)
- GAIN indicator
- WHITE/BLACK balance confirmation
- AUTOCENTRING confirmation



Audio Level Adjustment

The BVP-30A provides audio level control (CH-1 only) on the viewfinder which is operable when using the BVV-5PS Betacam SP recorder. Audio level is also indicated in the viewfinder.

CA-30 CCU Interface Adaptor

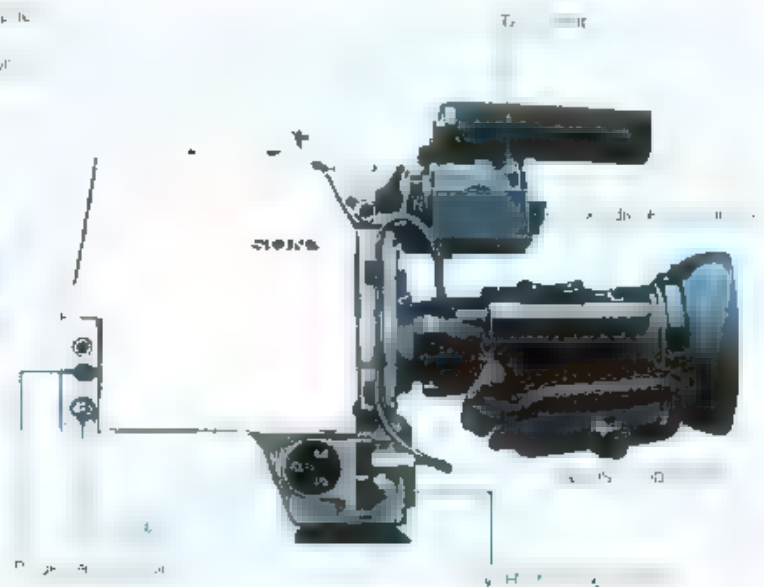
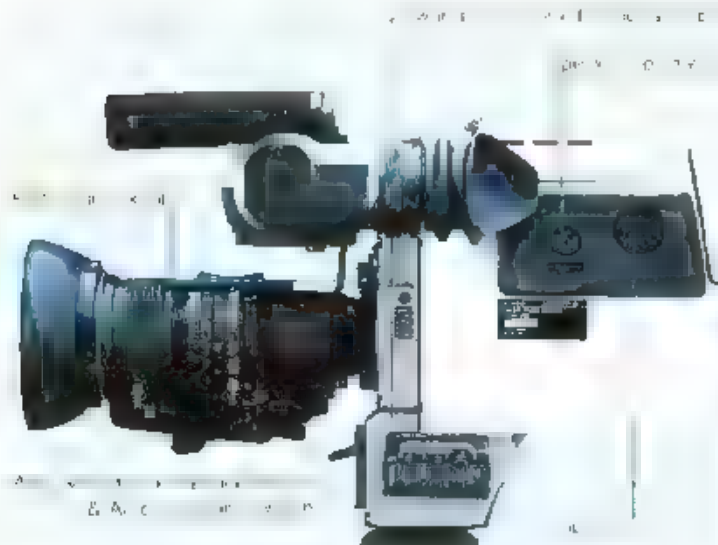
Using the CA-30 Camera/CCU Adaptor, the BVP-30A can be operated as a stand-alone portable camera able to be connected to the standard CCU-300 Camera Control Unit.

Other Features

- 2-line Image Enhancement
- Built-in Uni-directional Microphone
- Shading Compensation for Lens Extender
- Automatic Iris Adjustment Mechanism

Standard Accessories When Supplied as BVW-530AP/S

- 1 Carrying Case (LC-533)
- 1 Tripod Adaptor
- 1 Rain Cover
- 1 Shoulder Strap
- 1 Extender Board
- 1 Board Extractor
- 1 BVP-30AP/30AS Operation/Maintenance Manual
- 1 BVV-5PS Operation/Maintenance Manual



3-CCD Portable Camera

BVP-5P

BVP-50P



Sony's extensive research and development of CCD technology continues to meet the growing demands of ENG and field production

The BVP-5P benefits from excellent sensitivity and dynamic resolution

The BVP-50P offers, in addition, an electronic shutter and superb highlight handling

Operational Features

High Sensitivity

The excellent low light performance of the CCD Imagers yields a sensitivity figure of 2000 Lux of F5.0 (90% reflectance)

Considerably Reduced Vertical Smear (BVP-50P Only)

The newly developed FIT (Frame Interline Transfer) CCD Imagers reduce vertical smear by a factor of fifty times when compared to IT CCD Imagers

Resistant to Shock and Vibration

CCD Imagers are inherently more robust than conventional glass pick-up tubes.

High Resolution

By the adoption of spatial offset techniques, combined with sophisticated anti-aliasing technology, a horizontal resolution of 650 TV Lines is achieved.

Immunity to Strong Electric and Magnetic Fields

Since CCD Imagers do not require scanning beams, extraneous electric and magnetic fields have virtually no operational effect

Precise Preset Registration

Permanent precise alignment of the CCD imagers can be carried out during camera manufacture and no further adjustment is necessary. A registration error specification of 0.05% in all zones has been achieved

Electronic Exposure Control (BVP-50P Only)

The CCD elements incorporate an exposure period control function which enables the camera to capture clear images of fast moving objects. The full effects of this 'shutter' action are seen when recorded pictures are replayed in still or slow motion modes

A switch on the camera head selects the shutter speed from the following options: 1/60, 1/100, 1/150, 1/200, 1/400, 1/800, 1/1600 seconds. (When a CCU is connected, shutter speed can be selected from the CCU).



Compact and Lightweight

Sony's CCD imager Prism Block and the use of high density circuit boards allow the construction of an extremely compact and lightweight camera. Total camera weight is only 3.4 kg (7 lb 7 oz) (BVP-50P), 3.2 kg (BVP-5P).

Power Consumption

The use of CCD devices has a considerable effect in reducing power consumption to 11.5W (BVP-50P) (10.5W BVP-5P) approximately half that of an equivalent conventional tube camera.

Dynamic Contrast Control

For scenes containing high contrast ratios, the Dynamic Contrast Control Circuit provides good highlight

accommodation. This circuit can be switched off when not required

Automatic Functions

The camera is equipped with the following automatic functions for ease of operation:

- Automatic Iris Control

Iris positional feedback from the lens, via the 12-pin connector ensures smooth responsive auto iris operation

- Automatic White/Black Balance

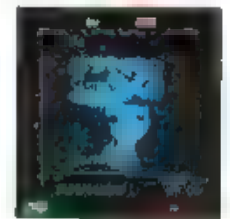
A new white balance system provides a dual memory for each of the four filter positions. The colour temperature of the white used for white balance is measured and displayed in the viewfinder

Viewfinder

The viewfinder position is adjustable both back and forth and left to right for optimum operation

Viewfinder indications are

- Shutter Speed
- Rec status (Red)
- Filter (1 to 4)
- Audio level and control
- Video level (Zebra pattern)
- Video gain indicator
- White/Black balance confirmation



Other Features

- 2H image enhancement
- Linear matrix
- Shading compensation for lens extender
- New built-in microphone with reduced vibration noise

Standard Accessories when Supplied as BVW-505P/550P

- 1 Carrying Case (LC-555)
- 1 Tripod Adaptor
- 1 Rain Cover
- 1 Shoulder Strap
- 1 Extender Board
- 1 Board Extractor
- 1 BVP-5P/50P Operation/Maintenance Manual
- 1 BVV-5PS Operation/Maintenance Manual

3-CCD Portable Camera

BVP-7P

BVP-70P



A high performance portable camera that fully meets the exacting requirements of broadcast ENG & EFP applications, the BVP-7P offers a standard of performance previously obtainable only from Plumbicon tubed cameras

Operational Features

High Resolution

The development of a new high density (457 000 element) high imager has resulted in a horizontal resolution figure of 700 TV lines

Reduced Vertical Smear

The new "HAD" (Hole Accumulated Diode) Sensor technology adopted in the BVP-7P/70P CCD sensors significantly reduces the vertical smear effect. Also, changes to the semiconductor window layers have made the residual smear white in colour further reducing its visibility. The BVP-70P combines F.T.CCDs with "HAD" sensor technology. As a result, the vertical smear is invisible for almost all modes of camera operation.

Excellent Sensitivity & Noise Performance

The BVP-7P/BVP-70P sets new standards for sensitivity and noise performance. Sensitivity is F5.6 at 2000 lux (90% reflectance). The excellent dark noise characteristics of the CCD structure ensures a Signal to Noise Ratio of 59dB.

Improved Colourmetry

Improvements to CCD spectral response have produced a colourmetry characteristic which closely approximates to Plumbicon-type cameras.

Electronic Shutter

The BVP-7P/70P features a variable speed electronic shutter function built into the CCD imager. The electronic shutter enables the BVP-7P/70P to capture clear images of high speed movement. This function remarkably improves dynamic resolution. Clear playback of still or slow-motion pictures can be obtained.

The shutter speed is selected by a switch on the camera.

Shutter Speed

1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 (seconds)



Newly Designed Viewfinder

The 1.5-inch monochrome viewfinder supplied with the BVP-7P/70P is designed for ease of operation. It features a unique new high resolution CRT and various operational indicators. The CRT is ready for use approximately 1 second after the power is switched on.

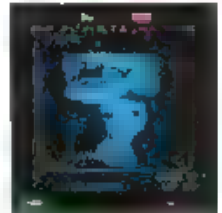
• High Resolution

The resolution is a remarkably high 550 television lines due to the magnetic focus CRT. A dual edge peaking adjustment circuit is included.

Viewfinder Indicators

The following viewfinder indications are available –

- Shutter speed
- Record status indicator (red)
- Filter position (1 to 4)
- Audio level indicator and control (CH-1)
- Zebra video level indicator
- Gain indicator
- White/black balance confirmation
- Anti-Vibration Microphone



The newly developed microphone is highly resistant to vibration. It electrically cancels vibration noise. This allows vibration free sound recording even when the camera is combined with a Betacam recorder unit in a difficult shooting environment.

Automatic Functions

- Automatic Iris Control
- Automatic white and black performance
Dual memories are provided for each of the filter wheel positions.
- Automatic contrast control.
The camera's knee point is automatically adjusted according to high light overload conditions.

Weight

The widespread use of circuit micro-miniaturisation has kept the total weight of camera and viewfinder down to a mere 3.4 kg.

Standard Accessories when supplied as BVW-507P/570P

- 1 Chest Pad
- 1 Tripod Adaptor
- 1 Carrying Case (LC-355)
- 1 Rain Cover
- 1 Shoulder Strap
- 1 Extender Board
- 1 Board Extractor
- 1 BVP-7P/70P Operation/Maintenance Manual
- 1 BVW-5PS Operation/Maintenance Manual

BVP-T7/T7P



- Pick-up Head/Lens assembly may be separated from the camera unit by up to 100 metres
- Suitable for special shooting applications where light weight, limited space and unobtrusiveness are major considerations
- Closely based on the BVP-7P Betacam camera
- Camera interfaces to Betacam recorders and to CCU-350, CCU-355 and CCU-360

* The supplied cable length is 20 metres. If a CCU-A cable is used, 100 metres max, a CABLE COMPENSATION UNIT must be fitted at the camera end and a CABLE COMPRESSION UNIT at the pick-up end (optional at present).

BVV-5PS



- High quality video and audio performance
- Compact rugged, lightweight and low power consumption
- Can be operated as a combined unit or cable connected to camera using appropriate adaptors
- Audio and video confidence replay
- Full range of machine control provided
- Colour replay adaptor option

Operational Features

Superior Picture Quality

Combining the advantages of Betacam SP circuit technology, with new metal particle video tape technology provides a remarkably improved picture quality over conventional Betacam recorders. A higher FM carrier frequency provides the ability to improve luminance bandwidth, S/N ratio and other key parameters. As part of the Betacam SP family the BVV-5PS is compatible with the existing Betacam format and can accept both metal particle and oxide video tape cassettes. Maximum record time is 36 minutes.

High Quality Audio Recording

In addition to the two conventional longitudinal audio tracks, two AFM channels are included making a total of four channels available. The two longitudinal channels have switchable Dolby C Noise Reduction systems. The two FM modulated audio channels are recorded with the video information by the rotary heads and these provide improved bandwidth, dynamic range and distortion characteristics over the longitudinal channels.

Compact, Rugged, Lightweight and Low Power Consumption

The use of advanced technology in mechanical design and construction and in electronic devices has contributed to the development of a recorder unit compact in size, weighing only 3.3 kg and with a power consumption of 13W. With an NP-1A battery, 50 minutes of continuous operation is possible (when used with BVP-5P).

The magnesium die-cast frame provides an extremely rugged unit able to withstand the rigours of continuous use in harsh environments.

The unit is dustproof and weatherproof and safety covers are provided to prevent accidental operation of certain controls.

Audio/Video Confidence Replay During Recording

Simultaneous monochrome replay in the viewfinder of recorded material is available in any of the camera/recorder combinations, or if the BVV-5PS is used separated from the camera with the VA-5P adaptor. Luminance or CTDM signals can be selected. Audio confidence replay is provided through the built-in loudspeaker or earphone.

Recording Review Function

If the return video switch is pressed momentarily with the machine in REC/PULSE mode, the tape rewinds 2 seconds and then automatically replays the last scene coming to rest precisely at the previous stop position.

If the Return Video Switch is pressed longer than two seconds, the tape rewind can be extended up to a maximum of 15 seconds.

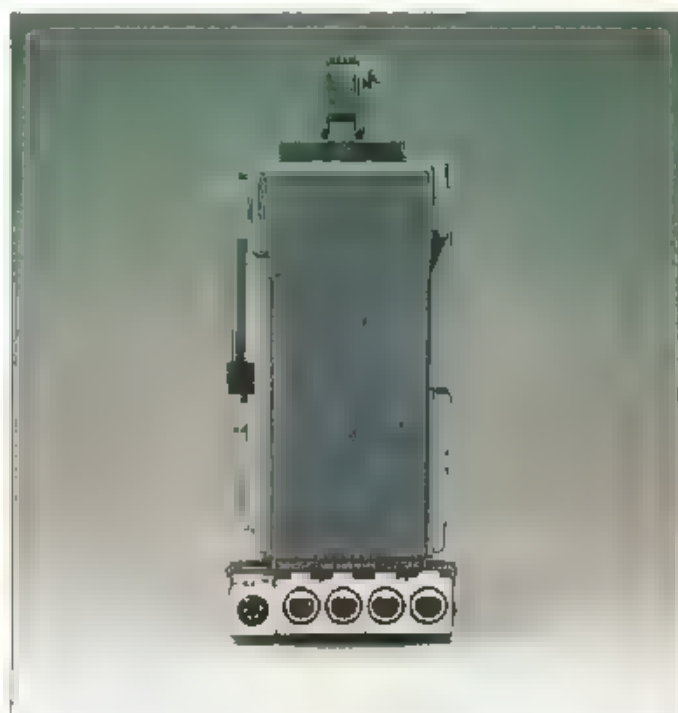
Time Code Generator/Reader

EBU Time Code is automatically recorded on a dedicated longitudinal track. VITC can also be selected and inserted at a pre-determined position.

A built-in LTC reader is a so incorporated. External time code can be applied to the Time Code Input for slave lock purposes and a TC output socket is also provided.

Time Display

Tape Time, Time Code and User Bit information can be shown on an 8 digit LCD Display. Warning indications are also displayed in the Time Display area.



Back Space Edit

Frame accurate back space editing is included to ensure sequential recording without picture break-up at transitions. This can be performed either from STANDBY or SAVE modes, or even after the cassette has been removed and then replaced in the VTR.

Full Function Control

PLAY, REW, F FWD and STOP controls located on the top of the unit have a safety cover to prevent accidental operation. When the unit is connected to a camera either directly or via a VA-5P adaptor these function controls are inhibited in the RECORD mode.

Audio Inputs

XLR inputs are provided for all four channels. Line, camera microphone or remote microphone can be selected as input and recording level can be independently adjusted on each channel.

Phantom Power Supply

Audio CH-1 can provide a 48V supply to an external microphone. Audio-1 input selector must be set to Ext Mic to take advantage of this facility.

Warning Indications

In the event of malfunction, warning indications are provided in the LCD Display for:-

- RF
- SERVO
- HLM (
- SLACK
- TAPE END
- BATTERY

Audio alarms are also provided in the loudspeaker.

Built-in Loudspeaker

During recording, mixed audio, individual audio channels and the alarm tone can be monitored.

Separated Operation Using VA-5P Option

By attaching the VA-5P the BVV-5PS can be operated as an independent recorder. Component or composite signals can be applied to the 26-pin connector from the source. Alternatively, composite signals can be applied to a BNC connector.

The VA-5P has two audio level meters, record control button and tape remaining indicator located on the top panel.

Battery Power

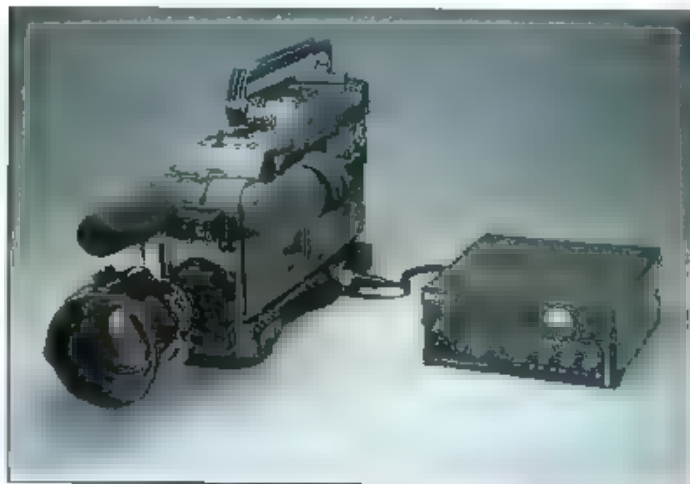
A battery case is provided to accept NP-1A batteries. To extend operational time, a DC-500 optional battery case can be attached in place of the supplied unit. This accepts BP-90/90A batteries. Alternatively a DC-520 can be added to allow operation with two NP-1A batteries.

Colour Playback Adaptor VA-500P (Option)

This adaptor enables the BVV-5PS to provide colour replay composite video.

In addition, it includes a JHF Modulator (PAL I/G switchable) enabling colour replay on a conventional TV Receiver. Four into one audio mixing is also included.

The VA-500P can be connected to a TBC to provide broadcast quality signals, considerably extending potential field applications of the BVV-5PS.



Supplied Accessories

- VTR Bracket
- 50-pin Connector Cap (2)
- 4-pin Connector Cap (2)
- Screw M4 (2)
- Shoulder Strap (1)
- Operation and Maintenance Manual (1)

VTR Adaptor
VA-5P



- Enables BVW-5PS to be used cable-connected to a camera or other signal source
- Component or Composite Signals can be connected via 26-pin connector
- Additional Composite Signal input via BNC Connector
- Two Audio Level meters provided
- Record Control provided on Top Panel
- Tape Remaining Indicator

Supplied Accessories

Shoulder Strap

Operational and Maintenance Manual

Colour Playback Adaptor
VA-500P



- Provides Full Colour Replay from BVW-5PS/BVW-200P, BVW-300P Recorder
- Single cable connection to Recorder
- Composite video signal output from Adaptor
- UHF Modulator gives colour replay on TV Receivers (UHF Modulator Switchable Central Europe/UK)
- Four-into-one audio mixing
- TBC may be connected to provide Broadcast Quality Replay

SPECIFICATIONS

	VA-5P	VA-500P
Power Requirements	12V	12V
Power Consumption	Max 8W Composite Max 2.5W Composite	15W
Weight	7kg (15lb 2oz approx)	5.5kg (12lb 2oz)
Dimensions (Approx)	90(W) x 220(H) x 148(D) 35 x 8.7 x 5.8 in	220(W) x 88(H) x 220(D) 8.7 x 3.5 x 8.7 in

Betacam SP Portable Recorder Player

BVW-35P



Conforming fully to the Betacam SP format with four audio channels and high quality video and audio performance, the BVW-35P can also be integrated as a player into editing systems since it is provided with an RS-422 Serial interface Port

Operational Features

Video and Audio Quality

The BVW-35P conforms in all respects to the Betacam SP format. Despite its small size, it is capable of extremely high quality video and audio performance.

Confidence Replay

Facilities for simultaneous replay of video and audio signals whilst recording are incorporated.

Monochrome replay in a camera viewfinder is possible.

Luminance or CTDM chrominance signals can be selected for replay by a connector panel switch.

Audio signals can be monitored by the built-in camera loudspeaker, an earphone or via the CH-4 Monitor Output connector.

Built-In Time Code Generator/Reader

This facility automatically records Longitudinal Time Code and Vertical Interval Time Code on a line position selected on the Time Code Control Panel.

The generator can be slave locked to an external input.

Off tape time code is connected from the Reader to the TC Output connector during replay. An 8-digit LCD display, located on the front panel, is provided for TC indication. Real time clock data can be assigned as User Bit data for LTC or VITC.



Audio Controls/Connectors

The two longitudinal and two AFM channels have independent front panel meters, and independent record/replay level controls.

XLR input and output connectors are provided for each channel, and input levels from camera head mic, external microphone or line can be selected with gain settings of -60,

-20, or +4dBm inputs.

Phantom Power Supply

Audio CH-1 can provide a 48V supply to an external microphone. To use this facility, LINE input must be selected at the -60dB setting.

Component/Composite Input and Output

Either component or composite input signals can be accepted from the camera via the 26-pin connector. Composite signals can also be connected via the BNC connector. A component dub output is available to provide highest quality editing with other Betacam recorders.

Two composite video outputs are provided for monitoring or TBC connection.

TBC Connection

In addition to the two video outputs, a Subcarrier input connector is provided for interconnection with a TBC for broadcast quality picture. (Advanced sync would be connected to the video in connector).

Frame Accurate Backspace Edit

An automatic backspace edit facility gives sequential recording without picture break-up at transition points.

Remote Control

An RS-422 Remote control interface connector is located on the Connector Panel, enabling the BVW-35P to be used as a Player in a Betacam Editing Configuration.

Picture Search

For fast access to a desired point on the tape, a monochrome picture is provided in Search mode at approximately +3 times normal speed.

Timer Display

Time Code or Tape Time can be selected for display on the front panel LCD unit status/malfunction indications are also shown in the same area.

Portable Design

The BVW-35P weighs only 8.6kg complete with battery and cassette, and has a power consumption of 34W.

Either two NP-1A or one BP-90/90A can be accommodated in the battery compartment. AC power operation can be provided from an AC-500CE power adaptor, or, if not required to power a camera, from a compact AC-21 power adaptor.

Built-in RF Modulator (PAL G/A Switchable)

This permits audio and video monitoring on any JHF TV Receiver.

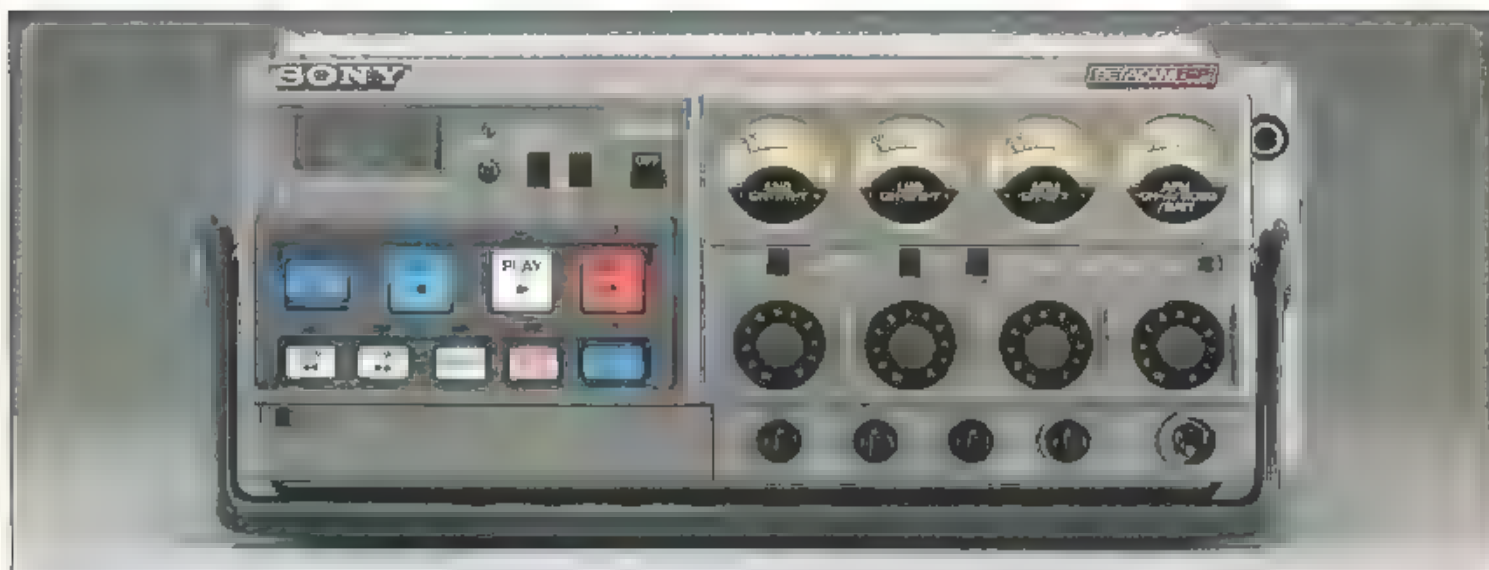
Supplied Accessories

Extender Board (1)

Soft Carrying Case (1)

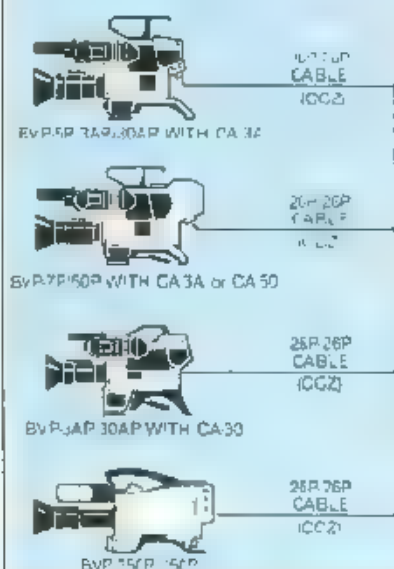
Shoulder Strap (1)

Operation and Maintenance Manual (1)

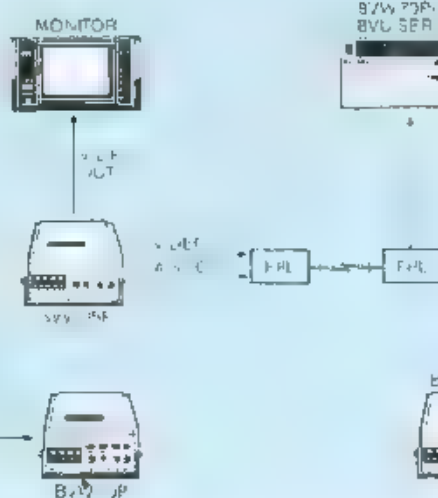


Typical Connections

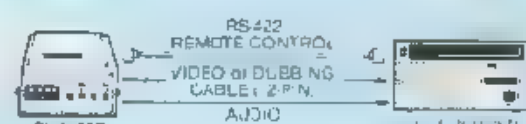
Field recording



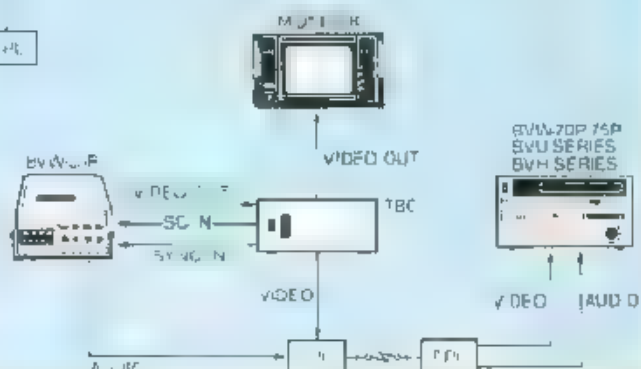
Field playback



Field editing



Field playback



Betacam SP Player
BVW-22P



The BVW-22P is a low cost player which accepts both sizes of metal particle and conventional oxide Betacam cassettes and offers a burnt-in Time Code display and infra red remote control as standard. All four Betacam SP audio channels can be recovered. It is ideal for off-line viewing or tape logging in any environment.

Operational Features

Playback capability with metal/oxide cassette tape

The BVW-22P can play back both metal particle and conventional oxide tapes. It is therefore suitable for use with all Betacam and Betacam SP recordings.

Longer Playing Time

The BVW-22P will provide playback time of up to 110 minutes when operating with an L-size cassette. In addition, the BVW-22P will accept S-size cassettes which will provide up to 36 minutes of operating time.

Front Loading System

All operational functions including tape cassette insert on are located on the front panel. This makes the BVW-22P very convenient, especially when rack mounted or in other places where space is limited.

Four Audio Channels

In addition to the two conventional longitudinal audio channels, two AFM audio channels are included. The two longitudinal audio channels are provided with the Type-C Dolby® NR (Noise Reduction) system.

Wired or Wireless Remote Control (Supplied)

The supplied Remote Control Unit (RM-770) allows wireless operation of functions such as Play/pause, Fast Forward, Rewind and 1/5 times normal speed Search in the forward and reverse direction. It is also equipped with a superimpose on/off switch. A five metre remote control cable is also supplied for wired remote control.



Picture Search

In Picture Match mode, colour saturated monochrome pictures are displayed at 3/5 times normal speed in both the forward and reverse directions. The start speed has been carefully set to show recognisable pictures to be seen as soon as picture search is initiated.

Built-in RF Modulator

The BVW-22P is equipped with a built-in RF modulator. Thus playback signals can be monitored on an ordinary TV

receiver. West European TV standard channels 30 to 39 can be selected and the modulation is PAL/GI switchable.

Superimpose Function

Time Code, CTL and User Bit information can be superimposed on a monitor through the VIDEO OUT, RF OUT or MONITOR OUT. On/off mode can be controlled by a front panel switch or the Remote Control Unit (RM-770).

LED Display

The 8-digit LED display shows Time Code, CTL, User Bit, and hour/minute information. Error messages and adjustment details are also displayed in this area for service and maintenance purposes.

Video/Audio Output

Audio outputs at line level from CH-1/3 and CH-2/4 are provided via Phono connectors. A front panel switch allows selection of longitudinal or AFM channels. In addition, each channel can be fed independently or mixed (CH-1 with CH-2, CH-3 with CH-4) to an audio monitor Phono connector. BNC and Phono video output connectors and an 8-pin monitor output are provided.

19-Inch Rack Mountable

The BVW-22P is four units high and can be installed in a 19-inch EIA standard rack with the optional RMM-507 Rack Mount Kit.

Supplied Accessories

RM-770 Remote Control Unit including Remote Control Cable and Batteries (1)
AC Power Cord (1)
Top Cover (1)
Operation and Maintenance Manual (1)

*Dolby is a trademark of the Dolby Laboratories Licensing Corporation.



Studio Players and Editing Recorders

There is a comprehensive range of Betacam SP studio players and editing recorders with, and without, DT.

The chassis and basic electronic design are the same for each unit. Therefore, all optional accessories, specifications, and most parts, are common.

All units feature onboard TBC with easily accessible

control pane and full Time Code capability. Where appropriate, they also feature comprehensive editing facilities including audio split edit, go to last edit recall, and Dynamic Motion Control for programmed stunt play or edit.

Betacam SP Player

BVW-60P



Betacam SP Player with Dynamic Tracking

BVW-65P



Betacam SP Recorder/Player

BVW-70P/70S

PAL / SECAM



Supplied Accessories

- AC Power Cord (1)
- Remote Control Cable RCC-5G (9-pin) (1)
- Extension Board (3)
- Operation and Maintenance Manual (1)

In order to make full use of the dynamic tracking feature in stand-alone applications, the BVW-65P is equipped with Dynamic Motion Control (DMC). This allows variable speed and Jog playback sequences to be memorised and subsequently recalled. A normal play speed segment can also be memorised at the beginning and end of the DMC segment.

Supplied Accessories

- AC Power Cord (1)
- Remote Control Cable RCC-5G (9-pin) (1)
- Extension Board (3)
- Operation and Maintenance Manual (1)

The BVW-70 has all the features of the BVW-75 except dynamic tracking. However, it is still equipped with dynamic motion control (DMC). This is to allow control of variable speed edits when used with a DT equipped player in an edit pair.

Supplied Accessories

- AC Power Cord (1)
- Remote Control Cable RCC-5G (9-pin) (1)
- 12-pin Dubbing Cable (1)
- Extension Board (3)
- Operation and Maintenance Manual (1)

Betacam SP Studio Recorder/Player

BVW-75P/75S

(PAL) SECAM



The BVW 75 s capable of recording, replay and editing in Betacam SP and conventional Betacam mode

A maximum of 110 minutes record/replay duration is achievable when the L cassette is employed

The machine can be directly connected to other Betacam Studio VTRs BVH series recorders and BVE series Editors using the RS 422 serial interface.

Two-machine editing can be accomplished using the built-in editing controls

Operational Features

Extended Record/Replay Capability

Employing the video and audio quality advantages of the Betacam SP format, the BVW-75 has the additional advantage of record/replay duration of up to 110 minutes when a BCT-90L videocassette is used.

BCT-60L and BCT-90L cassettes are physically larger than the standard BCT-5/10/20/30 cassettes, but both sizes are accepted by this machine. For Betacam SP recording, metal tape must be used and this is denoted by an M suffix e.g. BCT-60ML, BCT-20M.

Dynamic Tracking Replay

The latest DT technology is incorporated, which, with the built-in Time Base Corrector, provides broadcast quality pictures from -1 to +2 times normal replay speed.

Additionally, variable speed sequences within the DT range can be memorised and replayed as required.

Video/Audio Confidence Replay

Simultaneous replay of video and audio (CH-1 and CH-2) programme material whilst recording is available.

Editing Facilities

Two-machine editing can be carried out using the built-in facilities, full control of the Player being exercised from the Record machine. The following facilities are included:

- Assemble and Insert edits
- Auto Preview/Review
- Audio Split Editing
- Go To
- Last Edit Recall
- Frame Increment and Forward/Reverse Trim
- Selectable Pre-roll
- Dynamic Motion Control edit memory

Picture Search

Fast picture search can be carried out at speeds up to 24 times normal in forward or reverse in Shuttle mode. Colour pictures are provided up to 5 times and monochrome pictures up to 24 times normal speed. In Jog mode, tape moves frame by frame following the rotation of the Search control in either direction.

Time Code Generator/Reader

The built-in Time Code Generator/Reader automatically records LTC on a dedicated track and is also equipped with VITC and User Bits. Push buttons are located on the Time Code control panel for Time Code/User Bit setting.



User Bits can be pre-set and held in a non-volatile memory.

Selection of internal/external Time Code sources, REGEN, PRESET and REC RUN/FREE RUN can be made.

Character Generator

A built-in Character Generator can be used to superimpose characters on the video signal via video output 3.

Either Time Code Generator/Reader data (LTC, VITC, U-Bits) or CTL timer can be displayed.

Additionally, function status and tape speed in Shuttle Mode can be shown (this option is selected using the initial set up menu, which is also displayed by the Character Generator).

Colour Framing

Provided Betacam/Betacam SP recordings are read from a component source, it follows, from the basic principles of the component format, that there are no colour framing requirements.

A colour framing servo is provided to ensure that the replay of recorded material decoded from a composite signal, suffers no undue picture degradation.



Colour framing is performed by an 8 field capstan servo which uses the Colour Framing (D) pulse in the 12th line of the B-Y vertical blanking interval as the off tape colour framing reference.

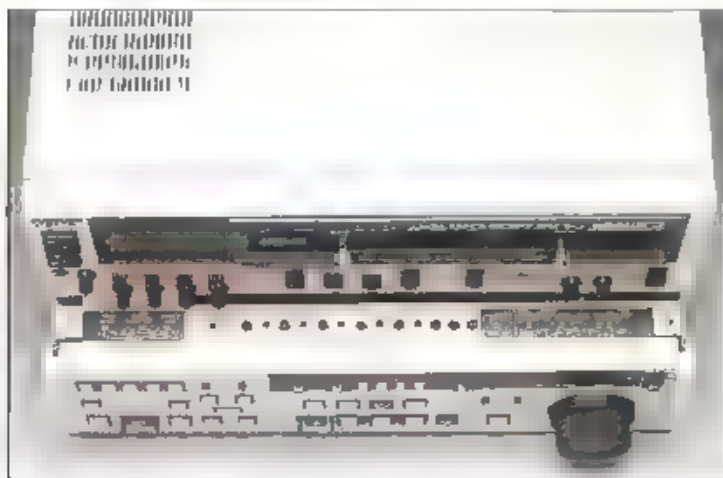
Additionally, VISC (Vertical Interval Subcarrier) is recorded in the 8th line of the Y vertical blanking interval as the reference subcarrier phase for the encoding process. The combined use of colour framing (D) and VISC produces a perfect matching of the encoding and decoding phase thus assuring superior composite signal quality.

SC-H Indicator

Independent SC-H phase indicators are provided for composite input and output signals. The operator can then readily check and correct the status of these signals.

Built-in TBC

In common with all other Betacam Studio TRs the BVW-75 has a built-in automatic Time Base Corrector which can be set up and adjusted from front panel controls or from the BVR-50 (Betacam Remote Control) option unit.



Capstan Override

Normal tape speed can be varied by $\pm 16\%$ using the search dial or by $\pm 8\%$ by using the TRIM buttons during playback.

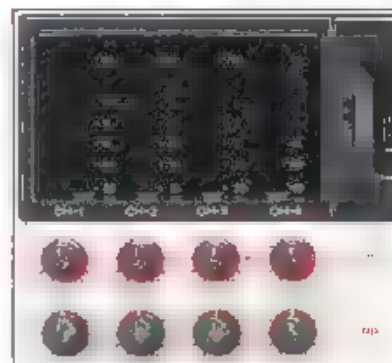
Audio System

Level Control

The two longitudinal and two AFM channels each have independent Record and Playback level controls.

An audio bargraph indicator is provided for precise level setting and either VU or PEAK levels can be internally selected for display.

Level controls have two lateral positions. When pushed towards the panel preset gain levels are engaged. When pulled out, manual gain can be adjusted by rotation of the control.



Audio Mixing

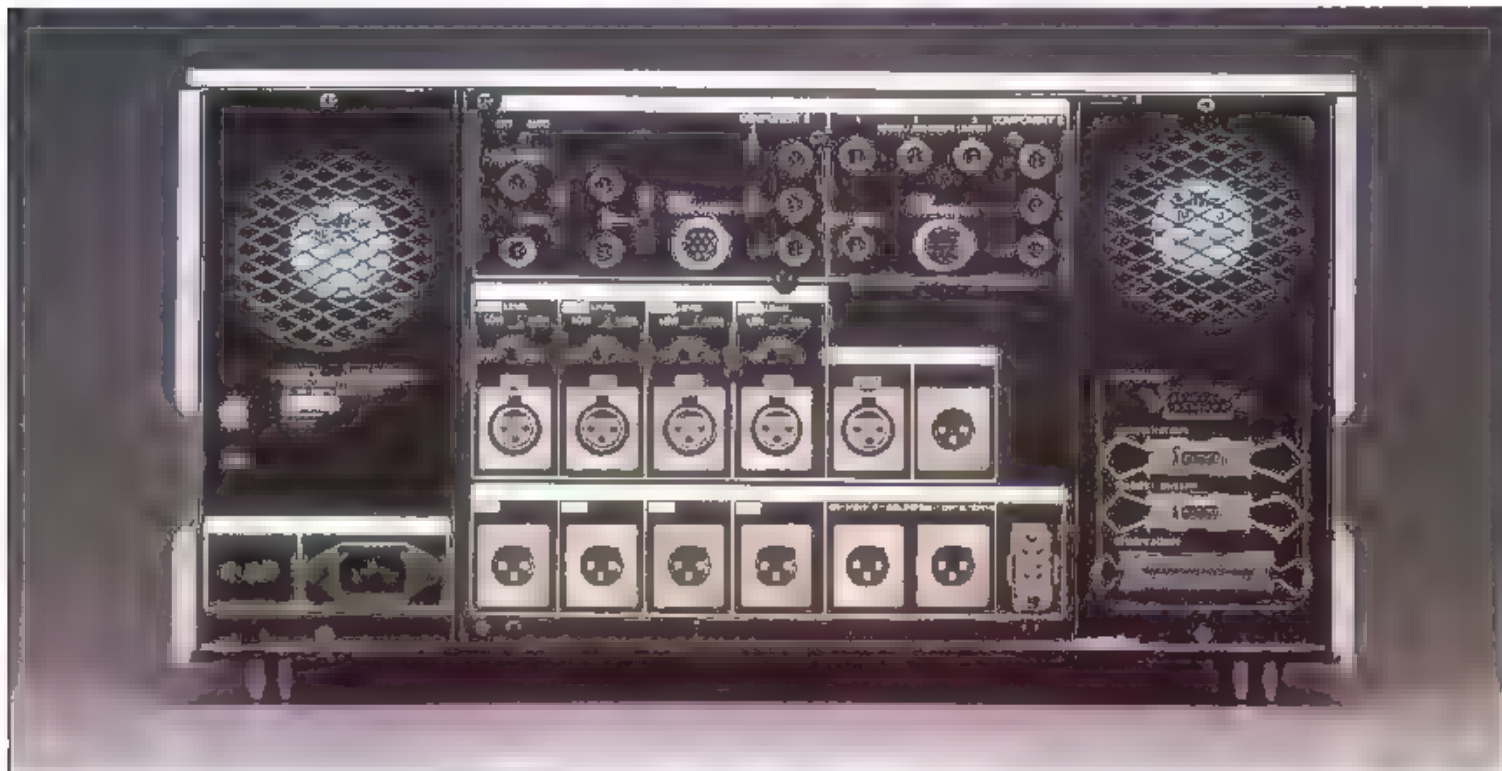
A simple audio mixer allows audio inputs to be recorded independently on CH-1 and CH-2 or combined and recorded on either CH-1 or CH-2 as selected.

In addition, parallel recording onto CH-1/2 and CH-3/4 is also possible.

System Interface

RS-422 Serial Interface

Provided for interfacing with BVW series BVH and BVU series recorders and BVE series Edit Controllers.



36-pin Parallel Interface

Provided for simple remote control applications.

Component Connectors

Y, R-Y, and B-Y input and output signals are available on BNC connectors or via the standard Betacam 12-pin DUB, COMPONENT connectors.

Initial Set Up

The BVW-75 incorporates an initial set up menu concept for operational simplicity and flexibility. This menu is scrolled and modified by Search Dial rotation whilst monitoring Video Out – 3 or the LED time display. The menu is held in a non-volatile memory.

Serviceability

To assist in servicing and fault location, comprehensive self diagnostics are incorporated.

A built-in digital meter is used for indication of accumulated totals of head drum rotation time, power on time, tape running time and the number of cycles of threading/unthreading.

Compact and Lightweight

Despite the extended record/replay duration of the BVW-75 and its improved features and facilities, it is, in fact, more compact than current Betacam studio machines, weighing only 30kg and with a power consumption of 240W.

The unit takes only 5U when fitted in a 19 inch rack using the RMM-100 optional rack mount kit. It should be noted that it is not necessary to remove the side panels in order to do this. The control panel can be tilted up to 90°.

Supplied Accessories

- AC Power Cord (1)
- Remote Control Cable RCC-5G (9-pin) (1)
- 12-pin Dubbing Cable (1)
- Extension Board (3)
- Operation and Maintenance Manual (1)

Betacam SP CCIR-601 Output (Option)

BK-75A

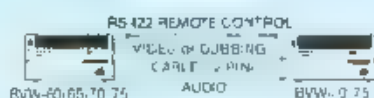
- Provides CCIR-601/656 compatible parallel digital component output
- Suitable for BVW-60P/65P/70P/70S/75P/75S
N.B. Not suitable for NTSC units
- Allows use of Betacam SP as a source in a component digital environment – with D-1 VTRs, graphics systems etc.

Kit Contents

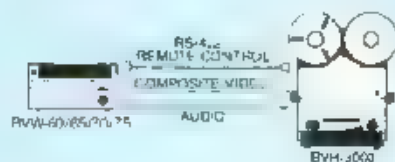
- Harness assembly with 25-pin D-type connector
- C for Digital I/F
- PROM
- Name label for D-type connector
- Fitting Procedure/Maintenance Manual

TYPICAL CONNECTIONS

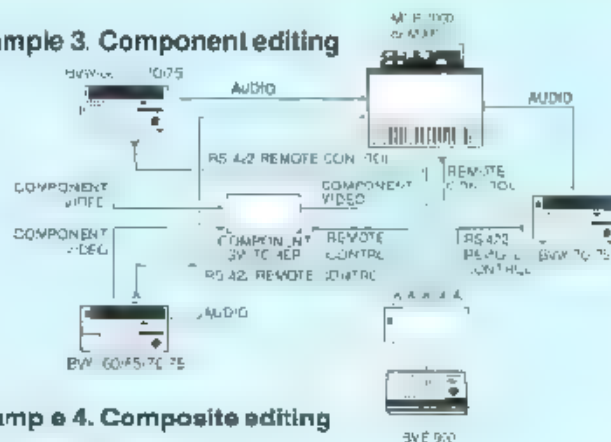
Example 1.



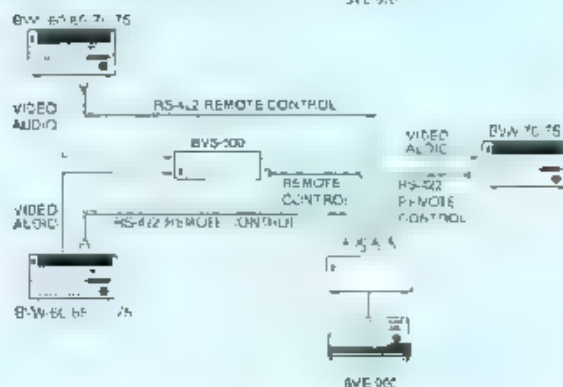
Example 2



Example 3. Component editing



Example 4. Composite editing



Colour Corrector
BVX-10P



The BVX-10P has been developed to provide colour correction on Component (Y, R-Y, B-Y) video signals

Operational Features

Component Colour Signal Correction

By performing correction on component $Y_R Y_B$ signals the highest signal quality possible is maintained.

Two composite video outputs are provided for system and monitoring purposes.

Input/Output Connections

Component inputs and outputs are available on both the standard 12 pin Betacam connector and on BNC connectors.

Remote Control

The BVX-10P is supplied with a remote controller (BVR-58).

Manual control of gain, black level and gamma can be exercised on Red, Green and Blue colours independently. Alternatively, each of these parameters can be switched to a preset level.

Rack Mount

The BVX-10P is mountable in a standard 19 inch rack. Its remote controller occupies half the width of a 19 inch rack and can be mounted side by side with a BVF-50P T-C remote controller. (A half rack width blank panel is included inside the BVF-5B for rack mounting separately.)

Supplied Accessories

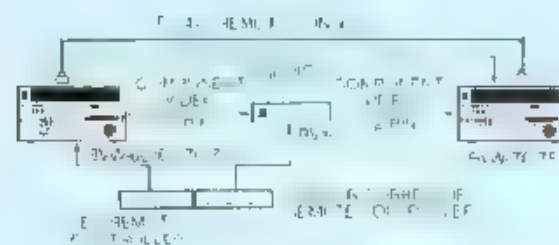
Rack Mount Brackets (2)

Remote Control Cable (1)

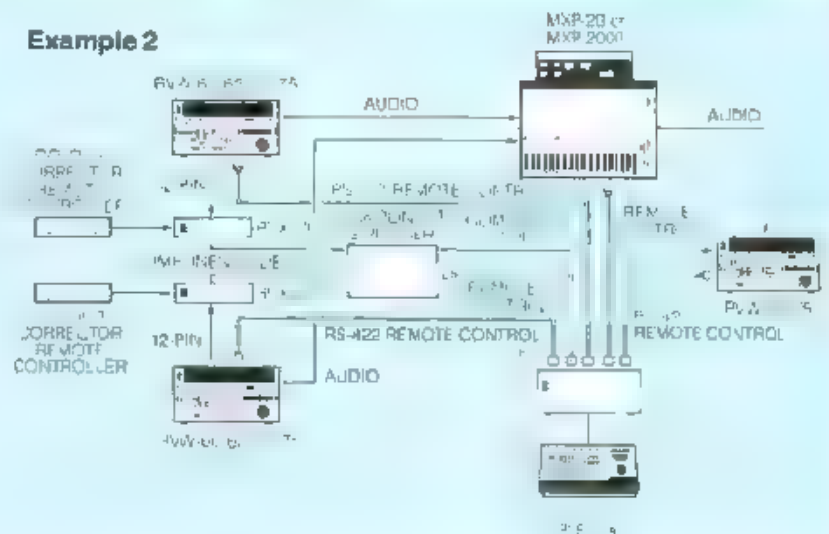
Operation and Maintenance Manual 1.

Typical Connections

Example 1



Example 2



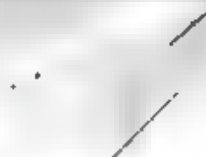
BETACAM SP System Options



AC 21/21CE
AC Adaptor for BVW-21/21P



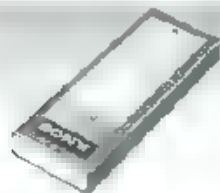
AC-500/500CE
AC Adaptor



BC-1WA
Battery Charger for NP-1A (up to four NP-1As)



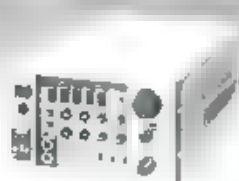
BC-210/210CE Battery charger for BP-90/90A (up to four BP-90/90As)



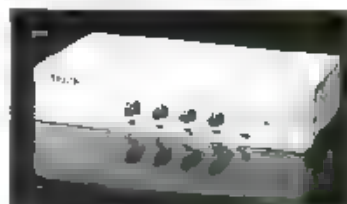
NP-1A
Nickel Cadmium Rechargeable Battery



BP-90A
Nickel Cadmium Rechargeable Battery



***CCL-300/300P/300PM**
Camera Control Unit for Separate Camera use



BVR-50P
TBC Remote Controller



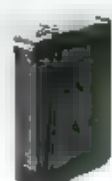
DC-210
Battery Mount for BVW-21/21P



DC-300
Battery Mount for BVW-30/30P



DC-310
Battery Mount for BVW-31/31P



DC 500 (Mount Type) BP-90/90A
Battery Mount for BVW-50/50P



DC-520 (Mount Type) BP-90/90A
Battery Mount for BVW-52/52P



BVF-50/50CE
Battery Mount for BVW-50/50P



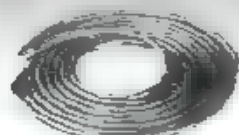
RM-P3 Remote Control Unit for BVW-30/30P



RMM-100 Remote Control Unit for BVW-10/10P



RMM-507
Remote Control Unit for BVW-50/50P



VDC-C5 Video Dubbing Cable for BVW-10/10P to BVW-50/50P



LC-533
Carrying Case for BVW-50/50P



LC 555
Carrying Case for BVW-50/50P



BVR-75
Remote Control Panel for BVW-70/70P

LC-201
Carrying Case for BVW-20/20P

* JVC-A1 Remote Control Carrying Case for BVW-20/20P

OPTIONAL ACCESSORIES COMBINATION CHART

The DC 210/300/310 are all suitable for fitment on the CA 3A/30/50/300

	VA-5	BVH 500A BVU-50/110/150	OA-1A/30 50/300	BVW 35
CCO-cable 14-14 pin				
CCO2-cable 14-26 pin				
CCO2-cable 26-14 pin				
CC2-cable 26-26 pin				

BETACAM SP Specifications

CAMERA UNIT FOR BVW-530 SERIES

		BVP 30A/30AP/30APS (NTSC PAL SECAM)
Dimensions mm (inch)	height	240 (9.4)
	width	105 (4.1")
	depth	210 (8.3")
Weight		4.3 kg (9 lb 3 oz) ¹⁾
Power requirement		DC 12V
Power consumption		24 W (NTSC PAL PAL M) 26 W (SECAM)
Pick-up tube		4" Diode Gun MS Plumbicon (magnetic focus, static deflection)
Horizontal resolution		650 lines at 0.5% picture height
Sensitivity		2000 lux at F5.6, 90% reflectance
Minimum illumination		25 lux at F11 lens, +18dB gain
S/N ratio		NTSC PAL M, 3dB (video) PAL (SECAM) 57dB (typical)
Registration zone-1		0.1% within a circle with a diameter corresponding to 100% of picture height
zone-2		0.15% within a circle with a diameter corresponding to picture width
zone-3		0.3% others

¹⁾ Without lens

BVP-T7/T7P SPECIFICATIONS

CAMERA	BVP-T7P
Pick-up Device	2" Diode Transfer GUN
Picture Element	768 (H) x 581 (V)
Optical System	F1.4 Prism System
Built-in Filters	1.5200°K 2.5000°K - ±10NC 3.5600°K
Lens Mount	Special Bayonet Mount
Video Output	1.0Vp-p, 75 ohms, sync negative, Two outputs (TEST OUT VTR connector)
Sensitivity	2000 lux at F5.6, 90% reflectance
Minimum Illumination (F1.4, +18dB gain)	Approx. 20 lux
Video S/N Ratio	59dB
Horizontal Resolution	700 TV lines
Registration	0.05% All Zones
Geometrical Distortion	Below measurable level
Variable exposure times	1/60, 1/75, 1/250, 1/500, 1/1000, 1/2000
Power Requirements	DC 2W, 10.5V to 12V
Power Consumption	1.45W (Automatic camera)
Warm-up Time	2 secs (from pre-heat condition)
Operating Temperature	20°C to 45°C, 4°F to 113°F
Storage Temperature	20°C to 50°C, 4°F to 122°F
Weight	1 Head 0.75kg, Processor unit 1.5kg
VIEWFINDER	
Picture Tube	1.5 inch Monochrome
Resolution	550 TV lines
Microphone	Directional, Anti-vibration

¹⁾ Subject to operations of lens

CAMERA UNIT FOR BVW-570/570P

CAMERA	BVP-70		BVP 70P	
Pick-up Device	3-chip 2/3 inch CCD FIT			
Picture Elements	768 (H) x 581 (V)		768 (H) x 581 (V)	
Optical System	F 1.4 Prism System			
Built-in Filters	1.5200°K 2.5000°K ±10NC 3.5600°K 4.5000°K 11.5°C			
Lens Mount	Special Bayonet Mount			
Video Output	1.0Vp-p, 75 ohms, sync negative Two outputs (TEST OUT VTR connector)			
Sensitivity	2000 lux at F5.6, 90% reflectance			
Minimum Illumination (F 1.4 + 8dB gain)	Approx. 15 lux		Approx. 15 lux	
Video S/N Ratio	60 dB		59 dB	
Horizontal Resolution	700 TV lines			
Registration	0.05% All Zones			
Geometrical Distortion	Below measurable level			
Variable exposure times	1/60	1/75	1/250	1/500 1/1000 1/2000
Power Requirements	1.4W, 10.5V to 12V			
Power Consumption	1.3W (with viewfinder)			
Warm-up Time	2 secs (from pre-heat condition)			
Operating Temperature	20°C to 45°C, 4°F to 113°F			
Storage Temperature	20°C to 50°C, 4°F to 122°F			
Weight	Approx. 3.4kg, Tripod Adapter 1.5kg			
VIEWFINDER				
Picture Tube	1.5 inch Monochrome			
Resolution	550 TV lines			
Microphone	Directional, Anti-vibration			

¹⁾ Subject to operations of lens

CAMERA UNIT FOR BVW-550/550P

	BVP-50C NTSC	BVP-50P PAL
Dimensions mm (inch)	height	244
	width	106
	depth	191
Weight	4.1kg (9 lb 3 oz)	
Power requirements	DC 2W, 10.5V to 12V	
Power consumption	1.5W	
Pick-up device	3-chip frame transfer CCD system	
Lens mount	Special Bayonet Mount	
Picture element	768 (H) x 581 (V)	
Optical system	F1.4 prism system	
Horizontal resolution	550 TV lines at centre	
Sensitivity	1000 lux at F5.6, 90% reflectance	
Minimum illumination	Approx. 5 lux at F1.4, +18dB gain	Approx. 5 lux at F1.4, +18dB gain
S/N ratio	60dB	
Registration	0.1% all zones	
Geometrical distortion	Below measurable level	
Built-in filters	1.5200°K 3.5600°K - ±10NC	
Video output	1.0Vp-p, 75 ohms, sync negative Two outputs (TEST OUT VTR)	
Connectors	VTR (50-pin), TEST OUT BNC LENS (12-pin, REMOTE 6-pin)	
Warm-up time	3.5 secs	
Operating temperature	20°C to 45°C, 4°F to 113°F	
Storage temperature	-20°C to 50°C, -4°F to 122°F	
Viewfinder	1.5" monochrome, 500TV lines resolution	
Microphone	Highly directional	
Supplied accessories	Tripod Adapter, VCT-14) Extender Board, Extractor Chassis Pad, 50-pin Cap, Rain Cover, Cap for Hard- Hole, Carrying Handle, Operation and Maintenance Manual	

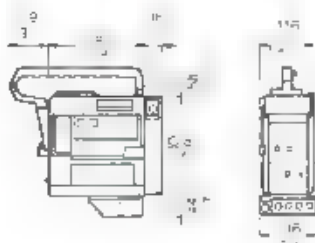
	BVP-5 (NTSC)	BVP-5P (PAL)
Dimensions height mm (inch), width depth	246 9 7 102 4 3 146 5 7	
Weight	4 kg 7 13 22 lb w/ extender	
Power requirements	DC 12V	
Power consumption	16.5 W w/ ext. video	
Pick-up device	3 chip - CCD	
Lens mount	S.M.C. 14, 18 mm	
Pict. element	576H x 492V	576H x 592V
Optical system	14 or 18 mm equiv.	
Horizontal resolution	525 Lines	
Sensitivity	2000 lux at 100% (90% at 100% gain)	200 lux at 100% (30% at 100% gain)
Minimum illumination	1 lux - 100% gain	2 lux - 100% gain
S/N ratio	58 dB	55 dB
Registration	0.6% max. lines	
Geometric distortion	0.3% max.	
Built-in filters	3700 K, 5500 K, 8000 K, 10000 K, 12000 K, 14000 K, 16000 K, 18000 K, 20000 K, 22000 K, 24000 K, 26000 K, 28000 K, 30000 K, 32000 K, 34000 K, 36000 K, 38000 K, 40000 K, 42000 K, 44000 K, 46000 K, 48000 K, 50000 K, 52000 K, 54000 K, 56000 K, 58000 K, 60000 K, 62000 K, 64000 K, 66000 K, 68000 K, 70000 K, 72000 K, 74000 K, 76000 K, 78000 K, 80000 K, 82000 K, 84000 K, 86000 K, 88000 K, 90000 K, 92000 K, 94000 K, 96000 K, 98000 K, 100000 K	
Video output	1.0V p-p, 75 ohms, sync negative TTL output = 1.0V (TTL) = 1.0V	
Connectors	5-pin 50-pin TEST & TAP 4-pin 12-pin	
Warm-up time	3.5 sec. from preheat to normal	
Operating temperature	-10°C to 50°C (-14°F to 122°F)	
Storage temperature	-20°C to 60°C (-4°F to 140°F)	
Viewfinder	1.5 inch i.e. 500 lines resolution	
Microphone	stereo 1000 Hz	
Supplied Accessories	Tripod Adaptor Extension board, Extractor 50-pin Cap. Rain Cover (BVP-5/BVP-105), Cap for a hole after taking off the handle, Operation and Maintenance Manual	

CAMERA	BVP-7	BVP-7P
Weight	Approx. 3-kg (7lb 7oz) with viewfinder	
Power Requirements	AC 12V, 10.5A (3.7V)	
Power Consumption	13W (with viewfinder)	
Pick-up Device	3-chip 2 1/2" non-CCD	
Lens Mount	Special Bayonet Mount	
Picture Element	768 h x 492 v	768 h x 582 v
Optical System	F 4 Prism S/S system	
Horizontal Resolution	60 Lines	
Sensitivity	3000 lux at 5 ft, 90% reflectance	
Minimum Illumination (F1.4 + 18dB gain)	Approx. 15 lux	Approx. 20 lux
Video S/N Ratio	62dB	53dB
Registration	2 CC + 4 Zones*	
Geometric Distortion	Below means (tablets)	
Variable exposure times	1/100, 1/125, 1/250 1/500, 1/1000, 2/1000	1/60, 2/5 1/500, 1/1000, 2/1000
Built-in Filters	1. 52JF (F) 2. 56JCF + 4ND 3. 56JCF 4. 56JCF + 1.16ND	
Video Output	1 CVBS, 2. 1/2" S-Video (REQ. VC) Two outputs (TEST OUT, VTR connector)	
Warm-up Time	3 1/2 secs. from pre-heat condition	
Operating Temperature	-20°C (-4°F) to +40°C (+104°F)	
Storage Temperature	-20°C (-4°F) to +122°F	
1.5" monochrome, 550 TV lines resolution		
VIEWFINDER		
Microphone	Directional	

BVV-5PS SPECIFICATIONS

General	Power requirements	DC 2V ± 5%	
	Power Consumption	14W	
	Operating Temperature	0 to +40°C (+32 to +104°F)	
	Storage Temperature	-20 to +50°C (-4 to +122°F)	
	Humidity	Less than 80% (Relative Humidity)	
	Weight	Approx. 3.4kg (7.5 lb)	
	Tape Speed	10.5 in/sec	
	Record/Replay Time (with BCT-30M)	More than 36 min	
	Fast Forward Time	Less than 4.5 min. with BCT-30M	
	Rewind Time	Less than 3.5 min. with BCT-30M	
Video	Search Mode	+ 3 times Normal Speed	
	Continuous Operating Time	Approx. 50 min. with NR-1A, 9VP-5 and BVV-5	
	BANDWIDTH	Metal Tape	Oxide Tape
	Luminance	25Hz to 5.5MHz ±5.5 dB	25Hz to 4.0MHz ±4.0 dB
	Chrominance R-Y (B-Y)	25 Hz to 1.5MHz ±0.5 dB	25Hz to 1.5MHz ±0.5 dB
	S/N RATIO		
	Luminance (Component IN/OUT)	48dB	46dB
	Chrominance (Component IN/OUT)	43dB	45dB
	DISTORTION		
	K Factor (2TPulse)	Less than 2%	Less than 3%
Audio	V.F. Error	Less than 20 msec	Less than 20 msec
	LONGITUDINAL TRACKS		
	Frequency Response	50Hz to 15kHz ±3 dB	50Hz to 15kHz ±3 dB
	S/N Ratio (rms unweighed) (at 3% distortion level)	58dB, Dolby NR OFF	50dB (Dolby NR OFF)
	Distortion (T.H.D. at 1kHz Reference level)	Less than 0.5%	Less than 2%
	Crosstalk	Less than -55dB at 1kHz	
	Depth of Erasure	More than 65 dB	
	Wow and Flutter	Less than 0.15% (DIN weighted)	
	AFM TRACKS		
	Frequency Response	20Hz to 20kHz ±0.5 dB	N/A
Signal Input	Dynamic Range	More than 80dB	N/A
	Distortion (T.H.D. at 1kHz Reference level)	Less than 0.5%	N/A
	SIGNAL INPUTS (via 50-pin connector)		
	Luminance	0Vp-p 75 ohms	
	Chrominance R-Y B-Y	0.7Vp-p 75 ohms	
	Time Code IN (BNC)	0.5 to 10Vp-p 75 ohms	
	Genlock Video IN (BNC)	1.0Vp-p 75 ohms	
	Audio CH-1/2/3/4 (XLR 3-pin Female)	-60dB, +4dB Selectable High Impedance Balanced	
	SIGNAL OUTPUTS		
	Genlock Video OUT (BNC)	1.0Vp-p 75 ohms	
Signal Output	Time Code OUT (BNC)	1.0V ± 3dB 75 ohms	
	CONNECTORS		
Other	Earphone OUT	Miniback	
	Playback Adapter	N/A	

Dimensions

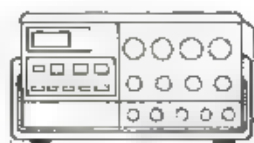


Unit: mm (inches)

BVW-35P SPECIFICATIONS

General	Power requirements	Dc 12V $\pm 1\%$	
	Power Consumption	36W	
	Operating Temperature	0 to +40°C (+32 to +104°F)	
	Storage Temperature	-20 to +60°C (-4 to +140°F)	
	Humidity	Less than 85% (Relative Humidity)	
	Weight	Approx. 6.7kg (14 lb 12oz)	
	Tape Speed	10.15 cm/sec	
	Record/Replay Time (with BCT 30M)	More than 36 min	
	Fast Forward Time	Less than 3.5 min. with BCT 30M	
	Rewind Time	Less than 3.0 min. with BCT 30M	
Video	Search Mode	± 3 times Normal Speed	
	Continuous Operating Time	Approx. 100 min. using BP-90A (with BVP 6 series)	
	BANDWIDTH	Metal Tape	Oxide Tape
	Luminance	25Hz to 5.5MHz ± 5 dB	25Hz to 4.0MHz ± 5 dB
	Chrominance R-Y/B-Y	25Hz to 1.5MHz ± 5 dB	25Hz to 1.5MHz ± 5 dB
	S/N RATIO		
	Luminance (Component IN/OUT)	46dB	46dB
	Chrominance (Component IN/OUT)	46dB	45dB
	DISTORTION		
	Differential Gain	Less than 2%	Less than 3%
Audio	Differential Phase	Less than 2°	Less than 3°
	K Factor (2T Pulse)	Less than 2%	Less than 3%
	J/L Delay	Less than 20nsec	Less than 20nsec
	LONGITUDINAL TRACKS		
	Frequency Response	50Hz to 15kHz ± 5 dB	50Hz to 15kHz ± 5 dB
	S/N Ratio (rms unweighted, at 3% distortion level)	58dB (Dolby NR OFF)	50dB (Dolby NR OFF)
	Distortion (THD, at 1kHz Reference level)	Less than 1.5%	Less than 2%
	Crosstalk	Less than -55dB, at 1kHz	
	Wow and Flutter	More than 65dB	
	AFM TRACKS	Less than 0.5% (Dolby NR OFF)	
Signal Inputs	Frequency Response	20Hz to 20kHz ± 5 dB	N/A
	Dynamic Range	More than 80dB	N/A
	Distortion (THD, at 1kHz Reference level)	Less than 0.5%	N/A
	Video IN (BNC)	1V (VBS), 4.0V (Sync) 75 ohms	
	Camera IN (26-pin) Composite Input	1.0Vp-p, 75 ohms Sync Negative	
	Component Input Luminance Y Chrominance R-Y B-Y	1.0Vp-p, 75 ohms 0.7Vp-p, 75 ohms	
	Time Code IN (BNC)	0.5 to 18Vp-p, 10k ohms	
	SC IN	2.0Vp-p $\pm 10\%$ 75 ohms	
	Audio CH-1/2/3/4 (XLR 3-pin Female)	60dB/ -20dB, +4dB Selectable, High Impedance Balanced	
	Video OUT 1/2 BNC	1.0Vp-p, 75 ohms Composite Video Sync Negative	
Signal Outputs	Sub/Component OUT (12-pin) Luminance Chrominance (R-Y/B-Y)	1.0V, 75 ohms Sync Negative 0.7V, 75 ohms	
	Audio Line OUT (XLR 3-pin) CH-1/2/3/4	+4dBm, Low Impedance Balanced	
	Headphone OUT (Standard Jack)	-20dB (max) 8 ohms	
	Earphone OUT (Mini Jack)	20dB (max) 8 ohms	
	Time Code OUT (BNC)	2.2Vp-p ± 3 dB 600 ohms 1.2Vp-p ± 3 dB 75 ohms	
	Remote Control (RS-422)	8-pin Female	

Dimensions:



Unit: mm (inches)

BVW-22P SPECIFICATIONS

General	Power requirements	AC 198 to 264V, 45 to 66Hz
	Power consumption	56W
	Operating temperature	+5°C to +40°C (+41°F to +104°F)
	Storage temperature	-20°C to 60°C (-4°F to 140°F)
	Humidity	Less than 80% (relative humidity)
	Weight	Approx. 15.6 kg (34 lb 7 oz)
	Tape speed	10.15cm/sec
	Playback time	More than 100 min. (BCT-90ML) More than 35 min. (BCT-30M)
	Fast forward/rewind time	Less than 240 sec. with BCT-90ML Less than 100 sec. with BCT-30M
	Search speed	± 3.5 times normal speed
Signals	VIDEO OUT (BNC) (PHONO jack)	Composite video, 1.0Vp-p, 75 ohms, sync negative Composite video, 1.0Vp-p, 75 ohms, sync negative
	RF OUT (IEC-type, standard aerial connector)	West European TV standard UHF, CH 30 to 39 adjustable, TV system G/A selectable
	MONITOR OUT (8-pin)	Video: 1.0Vp-p, 75 ohms, sync negative Audio: -5dBs, 47k ohms, unbalanced
	AUDIO LINE OUT (PHONO jack) CH-1/3, CH-2/4	-10dBs, 47k ohms, unbalanced
	AUDIO MONITOR OUT (PHONO jack)	-5dBs, 47k ohms, unbalanced
	HEADPHONES (STEREO PHONE jack)	-20dBs to -48dBs, 8 ohms
	REMOTE	Special mini jack
	Dimensions Unit: mm (inches)	

Design and specifications subject to change without notice.
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VIDEO PERFORMANCE

	METAL PARTICLE TAPE	OXIDE TAPE
Bandwidth: Luminance (50% modulation) Colour difference (50% modulation)	25Hz to 5.0MHz ± 1.5 dB 25Hz to 1.5MHz ± 0.5 dB	25Hz to 4.0MHz ± 2.2 dB 25Hz to 1.5MHz ± 0.5 dB
S/N ratio: Luminance Chrominance AM PM	More than 47dB More than 48dB More than 48dB	More than 46dB More than 48dB More than 48dB
Y/C delay	Less than 20ns	Less than 20ns
Differential gain	Less than 3%	Less than 3%
Differential phase	Less than 3°	Less than 3°
Pulse shape distortion (k-pulse, 2T)	Less than 3%	Less than 3%

AUDIO PERFORMANCE

	METAL PARTICLE TAPE	OXIDE TAPE
Longitudinal: Frequency response: (20dB below peak level (1)*) S/N ratio (at peak level (1)*, weighted CCIR 468-3) Distortion: (at 1kHz) at peak level (1)* at operational level (-10dBs) Wow and flutter (DIN 45507)	50Hz to 15kHz ± 1.0 dB More than 62dB (Dolby NR on) Less than 3% Less than 2% Less than 0.13%	50Hz to 15kHz ± 1.0 dB More than 58dB (Dolby NR on) Less than 3% Less than 2% Less than 0.13%
AFM: Frequency response: (20dB below peak level (2)*) S/N ratio (at peak level (2)*, weighted CCIR 468-3) Distortion: (at 1kHz) at peak level (2)* at operational level (-10dBs)	20Hz to 20kHz ± 3.0 dB More than 68dB Less than 3% Less than 0.6%	- - -

*Peak level (1) = +8dB above operational level

*Peak level (2) = +19dB above operational level

*All specifications were measured by playing back tapes recorded by standard Betacam SP VTRs

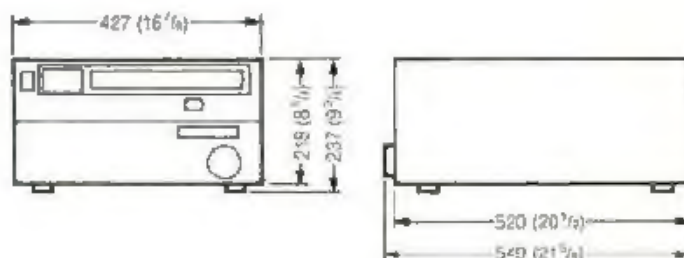
BVW-75P SPECIFICATIONS

General	Power requirements		AC 90 to 265V, 48 to 64Hz	
	Power Consumption		240W	
	Operating Temperature		+5 to +40°C (+41 to +104°F)	
	Storage Temperature		-20 to +60°C (-4 to +140°F)	
	Humidity		Less than 80% (Relative Humidity)	
	Weight		Approx. 30kg (66lb 2oz)	
	Tape Speed		10.15cm/sec	
	Record/Replay Time	With BCT-30M	With BCT-90ML	
		More than 36 min.	More than 100 min.	
	Fast Forward/Rewind Time		Less than 3.0 min. with BCT-90ML	
Video	Search Band	Shuttle	Still, 1/30, 1/6, 1/5, 1/4, 1/2, 1, 2, 5, 24 times normal speed, forward and reverse	
		VAR	-1, -1/2, -1/3, -1/6, -1/5, Still, 1/6, 1/5, 1/4, 1/2, 1, 2, times normal speed	
		JOG	Frame by Frame, forward and reverse	
	Dynamic Tracking Range		-1 to +2 times normal speed	
	BANDWIDTH		Metal Tape	Oxide Tape
Audio	Luminance		25Hz to 5.5MHz $+0.5/-0.5$ dB	25Hz to 4.0MHz $+0.5/-0.5$ dB
	Chrominance R-Y/B-Y		25Hz to 2.0MHz $+0.5/-0.5$ dB	25Hz to 1.5MHz $+0.5/-0.5$ dB
	S/N RATIO			
	Luminance (Component IN/OUT)		48dB	46dB
	Luminance (Composite IN/OUT)		45dB	N/A
	Chrominance	Component	48dB	45dB
		Composite	AM PM 48dB 48dB	48dB 48dB
	DISTORTION			
	Differential Gain		Less than 3%	Less than 3%
	Differential Phase		Less than 3°	Less than 3°
Audio	K Factor (2T Pulse)		Less than 1.5%	Less than 3%
	Y/C Delay		Less than 20nsec	Less than 20nsec
	LF Linearity		Component - less than 2% Composite - less than 3%	Less than 3% N/A
	LONGITUDINAL TRACKS			
	Frequency Response		50Hz to 15kHz $+1.0/-1.0$ dB	50Hz to 15kHz $+1.0/-1.0$ dB
	S/N Ratio (rms unweighted) (at 3% distortion level)		58dB (Dolby NR OFF)	50dB (Dolby NR OFF)
	Distortion (T.H.D., at 1kHz Reference level)		Less than 1.0%	Less than 2%
	Crosstalk		Less than -65dB (at 1kHz)	
	Phase Difference (at 15kHz)		± 20°	
	Depth of Erasure		More than 65dB	More than 65dB
Audio	Wow and Flutter		Less than 0.15% (DIN weighted)	
	AFM TRACKS			
	Frequency Response		20Hz to 20kHz $+2.0/-2.0$ dB	N/A
	Dynamic Range		More than 80dB	N/A
	Distortion (T.H.D., at 1kHz Reference level)		Less than 0.5%	N/A
	Phase Difference (at 15kHz)		± 10°	N/A

BVW-75P (continued)

Signal Inputs	Ref Video (BNC)	1.0Vp-p, $\pm 0.3V$, 75 ohms
	Video IN (BNC)	Composite Video 1.0V, 75 ohms, Sync negative
	Dub/Component IN (12-pin) Luminance Chrominance R-Y, B-Y	1.0V, 75 ohms, Sync Negative 0.7V, 75 ohms
	Component Input (BNC) Luminance Y Chrominance R-Y, B-Y	1.0Vp-p, 75 ohms 0.7Vp-p, 75 ohms
	Time Code IN (XLR 3-pin)	0.5 to 18Vp-p, 10k ohms
	Audio CH-1/2/3/4 (XLR 3-pin female)	LOW -60dBm, 600 ohms/3k ohms selectable, balanced HIGH +4dBm, 600 ohms/10k ohms selectable, balanced
Signal Outputs	Video OUT 1 (BNC)	1.0Vp-p, 75 ohms, Composite Video, Sync Negative
	Video OUT 2 (BNC)	1.0Vp-p, 75 ohms, Composite Video, Sync Negative
	Video OUT 3 (BNC)	0.7Vp-p, 75 ohms, Non-Composite
	Dub/Component OUT (12-pin) Luminance Chrominance (R-Y/B-Y)	1.0V, 75 ohms, Sync Negative 0.7V, 75 ohms
	Component OUT (BNC) Luminance Y Chrominance (R-Y/B-Y)	1.0Vp-p, 75 ohms 0.7Vp-p, 75 ohms
	Audio Line OUT (XLR 3-pin) CH-1/2/3/4	+4dBm, low impedance, balanced
	Audio Selected Line Out 1/2 (XLR 3-pin)	+4 dBm, low impedance, balanced
	Time Code OUT (XLR 3-pin)	2.2Vp-p $\pm 3dB$, 600 ohms
Processor Adjustment	Video Level	$\pm 3dB$
	Chroma Level	$\pm 3dB$
	Set up Level	
	Black Level	0 to 100mV
	Hue (NTSC ONLY)	$\pm 15^\circ$
	System SC Phase	360°p-p
	System Sync Phase	+3 to -1 μ sec
	Y/C Delay	± 50 nsec
Others	Remote 1 IN	9-pin, female
	Remote OUT	9-pin, female
	Remote 2	36-pin, female
	TBC Remote	15-pin, male
	Monitor	8-pin, female
	Headphones	JM-60 Headphone Stereo Phone Jack

Dimensions



Unit: mm (inches)

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